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ABSTRACT

This article examines the current state of available programming and content delivered via the Internet for individuals with severe disabilities. An examination of current research points to a lack of free programming and content devoted to the educational needs of these students. Currently available resources for individuals with more significant disabilities are limited by many factors, including costs for training and materials, lack of accessible Web sites for individuals with significant disabilities, relevant programming and information, lack of free programs, understanding the interrelationship between student learning needs and instructional delivery systems, and the ability for developers to address the programming needs of this small population of end-users. Programming for this population should focus on functional academic support, daily living skills instruction, job exploration, and online recreational opportunities. Access to programming should provide multiple points for end-users and provide content in varied formats to suit individual needs. It seems the challenge of using the Internet for instruction of students with severe disabilities may require educators to examine a new paradigm of instructional delivery. (Contains 15 references.) (Author)

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Exploring Opportunities for Online Instruction for Individuals with Severe Disabilities

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Abstract: This article examines the current state of available programming and content delivered via the Internet for individuals with severe disabilities. An examination of current research points to a lack of free programming and content devoted to the educational needs of these students. Currently available resources for individuals with more significant disabilities are limited by many factors including costs for training and materials, lack of accessible web-sites for individuals with significant disabilities, relevant programming and information, lack of free programs, understanding the interrelationship between student learning needs and instructional delivery systems, and the ability for developers to address the programming needs of this small population of end-users. Programming for this population should focus on functional academic support, daily living skills instruction, job exploration, and online recreational opportunities. Access to programming should provide multiple points for end-users and provide content in varied formats to suit individual needs. It seems the challenge of using the Internet for instruction of students with severe disabilities may require educators to examine a new paradigm of instructional delivery.

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Foundations

"As technology becomes more advanced and technologies are merged, it becomes more important that technology and learning relationships are thoroughly explored and understood. Until these relationships are better understood, there is a good chance that technology will continue to have much less impact on special education than we all believe is possible" (Hasselbring, 2001).

The Internet has had a profound affect on instructional programming for many student populations. The purpose of this article is to examine the feasibility of providing online course materials and support for students with more significant disabilities. For purposes of this discussion, this article will consider the definition of mental retardation and severe disabilities as specified in the Individuals with Disabilities Education Act, 1997. "Mental retardation means significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance" (IDEA, 1997). Individuals typically considered as having significant (severe and profound disabilities) will usually demonstrate IQ levels below 40 and may also have additional disabilities, including movement difficulties, sensory losses and/or multiple disabilities which may foster behavior problems. This article will examine existing technologies for Internet access and the specific programming needs of individuals with significant disabilities.

The practice of using the Internet as a delivery system for educational programming has flourished in the past decade. Entering "online course" in a web search engine will generate upwards of 263,000 entries (www.alltheweb.com search results, April, 2002). Most major universities across the globe have developed and provide some form of online instruction to offer class content, support or information. Likewise, the public school environment has begun to develop and implement online course content for students at all levels. With continued improvements occurring in technologies associated with the Internet, these trends are likely to continue (Hofstetter, 2001). Currently available technologies for computer access exist for students with significant disabilities, however programming and content on the World Wide Web (WWW) is limited to purchasing programs from selected vendors and web-sites that are sometimes

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inaccessible to this population. The Internet can be used as a resource and instructional tool for these students, however content and accessibility must be addressed in the design of web-sites and programs for this population (Hasselbring, 2001).

Available Technology

Internet technology has revolutionized instructional delivery systems for many populations. However, many localities may have a difficult time finding funding and resources to provide Internet access for students. Therefore, "very little hard evidence is available showing what learning gains might be expected from infusion of high technology, in part because there are very few classroom situations where an entire class has ready access to technology throughout the school day" (Tiene & Luft, 2001). This points to one of the serious challenges facing implementation of Internet instructional systems; the ability to provide computer technology, training and related equipment for students and teachers. This becomes even more difficult as it relates to special education and the needs of individuals with significant disabilities. Most students falling into this category of disability will need hardware designed to offer them access to the Internet (Snell & Brown, 2000). This could include switch technology, alternate keyboards, voice recognition software or hardware, and interface programming and hardware to allow functionality. All of these technologies are costly, and in some instances, hard to locate. Findings from the 2001 Report on Special Education Programs in California point out that "technology and equipment for instruction and mobility of students with perceptual and/or motor disabilities is not available or very outdated" (CDE, 2001). Dr. Fred Hofstetter sums up the current situation as follows, "In theory, the ubiquity of the Internet provides the opportunity for teachers and students to remain in touch virtually when they cannot interact personally in the classroom. In practice, educators need software that enables them to put courses online, view student performance data, identify problems when students encounter difficulty, and provide scaffolding to help students overcome the difficulties" (Hofstetter, 2001).

Even with all of the difficulty surrounding accessing the Internet for instructional purposes, most teachers, parents, and students view the Internet as a viable instruction tool. When questioned about Internet educational delivery practices in a study conducted by Lewis, Harrison, Lynch and Saba, teachers and administrators stated that technology use improves academic performance, increases student on-task time, provides quicker access to information and learning, and exposes students to new "types" of learning (Lewis et al., 1994). We can conclude from this study that teachers and administrators see online educational structures as positive learning systems. Unfortunately, these systems may be costly to divisions in meeting training and equipment needs (CDE, 2001). "The many years of under funding and the inequitable distribution of what funds were available, has resulted in some districts capable to provide while their neighbors struggled to meet minimal standards" (CDE, 2001).

Internet technologies have made access to instructional materials and content easier for those populations able to access the World Wide Web. Further, access to the web provides students with multiple occasions to interact with a broad range of learning opportunities and environments (NCIP, 2001). Access to the web may be in the form or programming or hardware, but systems must be designed to address the specific needs of varied users with disabilities (Tinker, 2001). This access needs to be expanded to include students with more significant disabilities. In order to provide this access, systems to address the needs of these students should make use of available technologies and access systems to minimize expense and training demands for potential end-users.

Providing Programming for Students with Severe Disabilities

There are many challenges and rewards to be found in providing programming and instruction to students with severe disabilities via the Internet. There are many characteristics of typical individuals with severe disabilities (Snell & Brown, 2000) that are well-supported and enhanced via Internet technologies and computer instruction delivery systems. Independent learning, self-paced access, variable levels of

support, and repeated practice are important factors identified as effective instruction for individuals with significant disabilities (Snell & Brown, 2000).

The format of instructional delivery lends itself to independent interaction and learning, which has been a cornerstone in the individualized programs used by these students. When teachers use the Internet with these students, the role of the teacher is altered and the computer becomes the instructor, which fosters student-driven discovery and learning (Sprague & Dede, 1999). Students are allowed to access the information at their own speed and control repetition of content.

Students with more severe disabilities are often using picture communication systems as their mode of communication (Downing, 2002). Internet technologies have made images readily available over the WWW. Using pictures can make curriculum more accessible for students with significant disabilities. "They are able to use visual clues without struggling with text" (McInerney, 2000). This is an example of how Internet instructional delivery may be superior to other modes when working with certain populations of students. Images can be combined with narration to provide learning experiences that are more accessible to the student.

"Clearly, one could argue that in many cases, students with disabilities have a greater need for accessing technology than do their non-disabled peers. This may be especially true for students who need technology just to function within the school environment, such as students with sensory and physical impairments. However, even many students with high-incidence disabilities, such as learning disabilities, require technology to function in the school environment"(Hasselbring, 2001).

Instruction in leisure activities is a component of most programs for students who have severe and multiple disabilities. The Internet can provide a large array of visual and auditory content to address this area of needed instruction. Students with severe disabilities can use computer access and currently available Internet web-sites to explore leisure activities and make activity choices (Dattilo, 1986). One type of leisure instruction could be Internet field trips for students. Students can exchange information about where they live and visit locations via web-sites to experience different settings (Harris, 1994). Although this has been proven to be an effective delivery system for this population and content area, many students with severe disabilities "under-utilize assistive technologies" related to leisure activity instruction (Wehmeyer, 1999).

The Internet can provide opportunities for repeated exposure to the same content and lessons driven by student needs. Finding content that is focused towards those needs for students with significant disabilities is difficult. It is important that teachers examine the relationship between the capabilities and inherent qualities of the Internet and their specific student (Hasselbring, 2001). It is not enough to simply provide these students with access systems to "surf" the web, we need to provide them with instructional programming that is relevant to specific student needs and Internet experiences that are enriching to the student's daily life. Some of these areas of identified instructional need include functional academics. Content focusing on support of functional skills, such as purchasing foods at a grocery store, writing checks at a bank, or utilizing public transportation can be supported and instructed through visual presentations delivered via the internet. Daily living skills, such as washing hands, doing laundry, doing dishes, or using the telephone can also be adapted and instructed in various formats delivered over the internet. Job exploration can be accomplished through descriptive and visual formats that provide students with significant disabilities information about job expectations and skill requirements.

A major issue relating to available Internet content for students with severe disabilities has been the lack of free content specifically designed for access and use by these students. Content needs to be modified to provide students with significant disabilities avenues of access that are meaningful and useful to their individual educational program. This requires many individuals coming together to create content and programming focused on the student with severe disabilities. "Realizing the potential of the new educational technology for learners with special needs will require a coordinated effort that in not going to happen by itself" (Hofstetter, 2001). The main difficulty with available content for this population has been that the number of possible end-users has not been high enough to warrant site and program development. The "too narrow market" has limited commercial appeal and therefore, limited choices for this population of student (Tinker, 2001). Organizations and educational institutions need to examine funding and explore grant possibilities to provide web-sites devoted to the programming and content needs for this population of students.

A final consideration that needs to be addressed in providing content and programming for students with significant disabilities is the need for adaptable programming. Adaptable programming should provide content and programs that can be modified by end-users to fit specific access or use issues.

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These access issues may be the need for an end-user to use a single switch, multiple switches, simplified graphic presentations, color or monochrome graphics, auditory supports or extensive auditory prompting, or visual supports that are flexible enough to allow use of the specific program without audio. All of these adaptability issues must be built into content and programs offered to this population because of the wide array of student skills and needs presented when dealing with individuals with significant disabilities.

Conclusions

The Internet can provide educational instruction to a wide variety of individuals. The qualities of Internet instructional delivery systems seem to fit well with the educational needs of students with severe disabilities. Instruction over the Internet can provide independent practice, repetition of materials, visual and auditory learning experiences, vast resources for exploring leisure activities, and student discovery learning. However, currently available resources for individuals with more significant disabilities are limited by many factors. These include costs for training and materials, lack of accessible web-sites for individuals with significant disabilities, relevant programming and information, lack of free programs, understanding the interrelationship between student learning needs and instructional delivery systems, and the ability for developers to address the programming needs of this small population of end-users. Programming must address the functional academic, daily living skill, recreation and vocational needs for this population of students, as well as the various access issues surrounding use of the Internet and computer technology. It seems the challenge of using the Internet for instruction of students with severe disabilities may require educators to examine a new paradigm of instruction. "Using technology for providing access and delivering instruction is inadequate by itself. Special educators must adopt a new model for learning to meet the challenges of the next century, and they must use technology in new ways to meet these challenges" (Hasselbring, 2001).

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